Keeler Dunes Dust Control Project

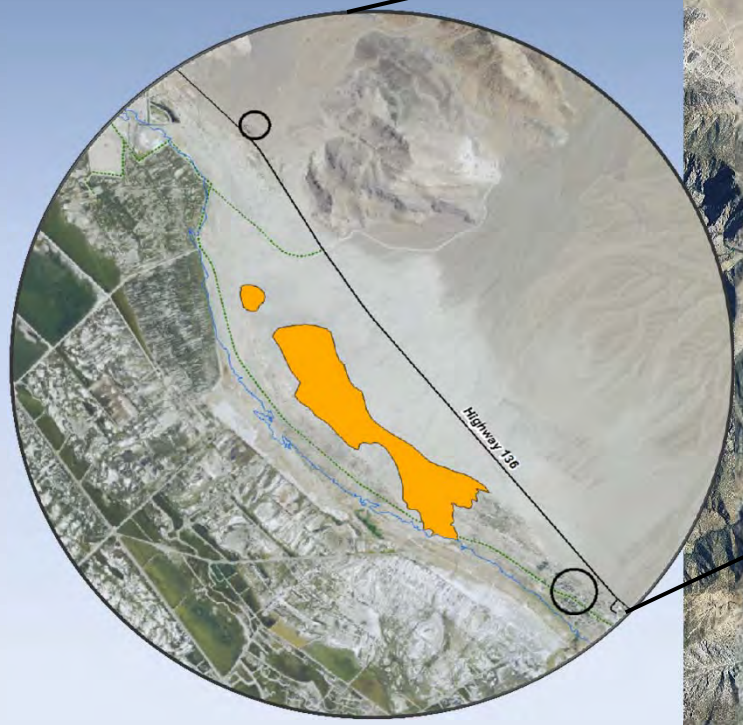
Great Basin Unified Air Pollution Control District

AMEC Environment and Infrastructure

Pre-Bid Meeting and Site Visit

May 9, 2014

Location of the Keeler Dunes Project



Lone Pine

Swansea

Keeler Dunes Project Area

Keeler

Owens Lake

Highway 136

Highway 395

Highway 190

Cartago

Olancha

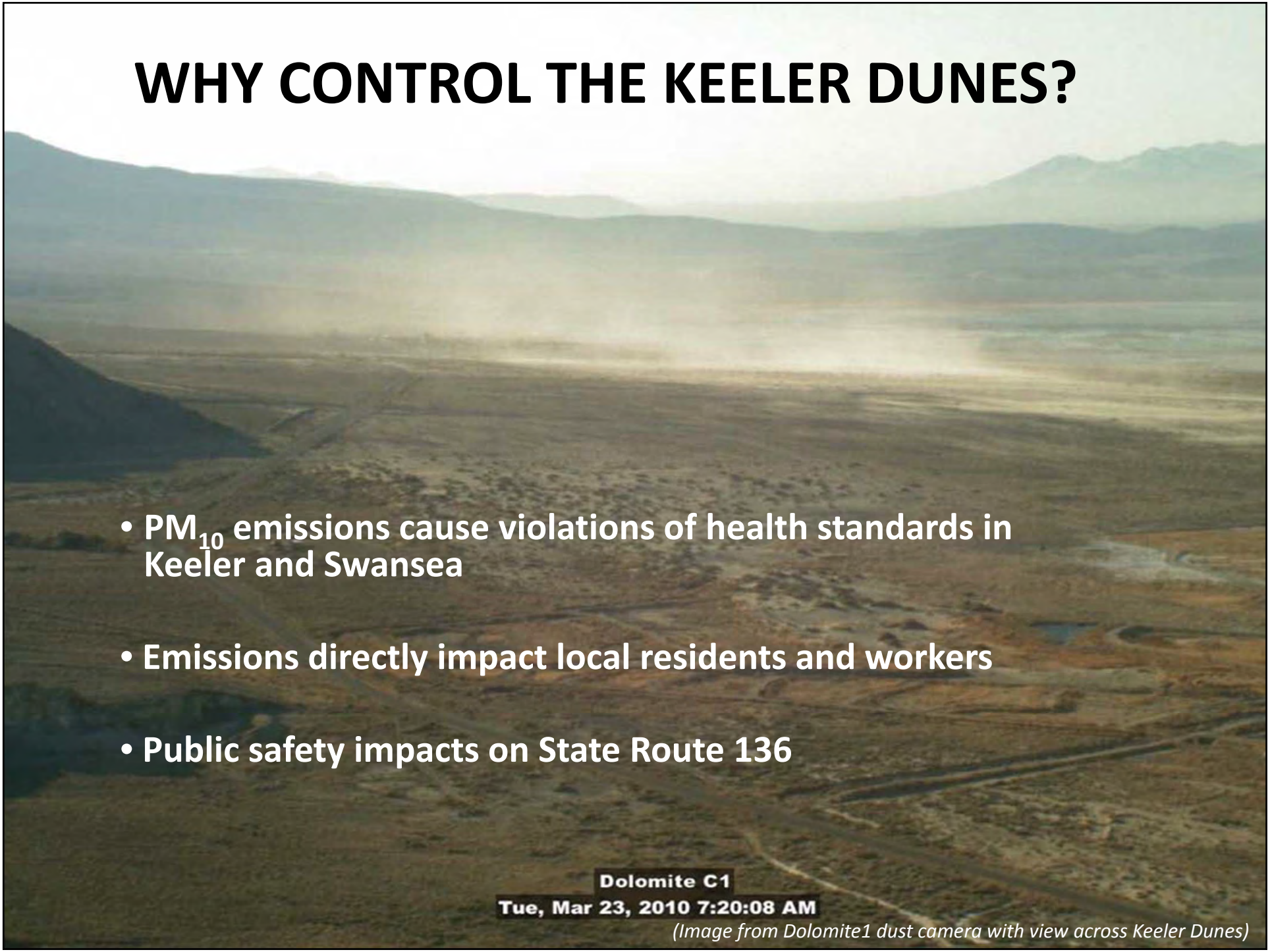
N
W E
S

NAIP 2009 background image

0 1.25 2.5 5 Miles

WHY CONTROL THE KEELER DUNES?

- PM_{10} emissions cause violations of health standards in Keeler and Swansea
- Emissions directly impact local residents and workers
- Public safety impacts on State Route 136



(Image from Dolomite1 dust camera with view across Keeler Dunes)

Project Goals

Air Quality Goals

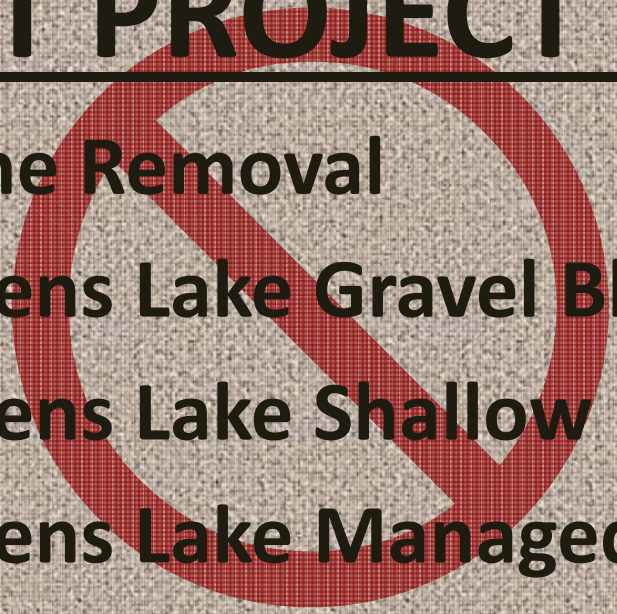
- Lower PM10 emissions from dunes
- Attain Federal and State PM10 standards in Keeler and Swansea

Other Goals (based on stakeholder input)

- Low impact control measure - No 'Brute Force' measures
- Preservation of natural resources
- Natural appearing and aesthetically pleasing
- Self sustaining on long term basis
- Minimal impact to existing natural resources

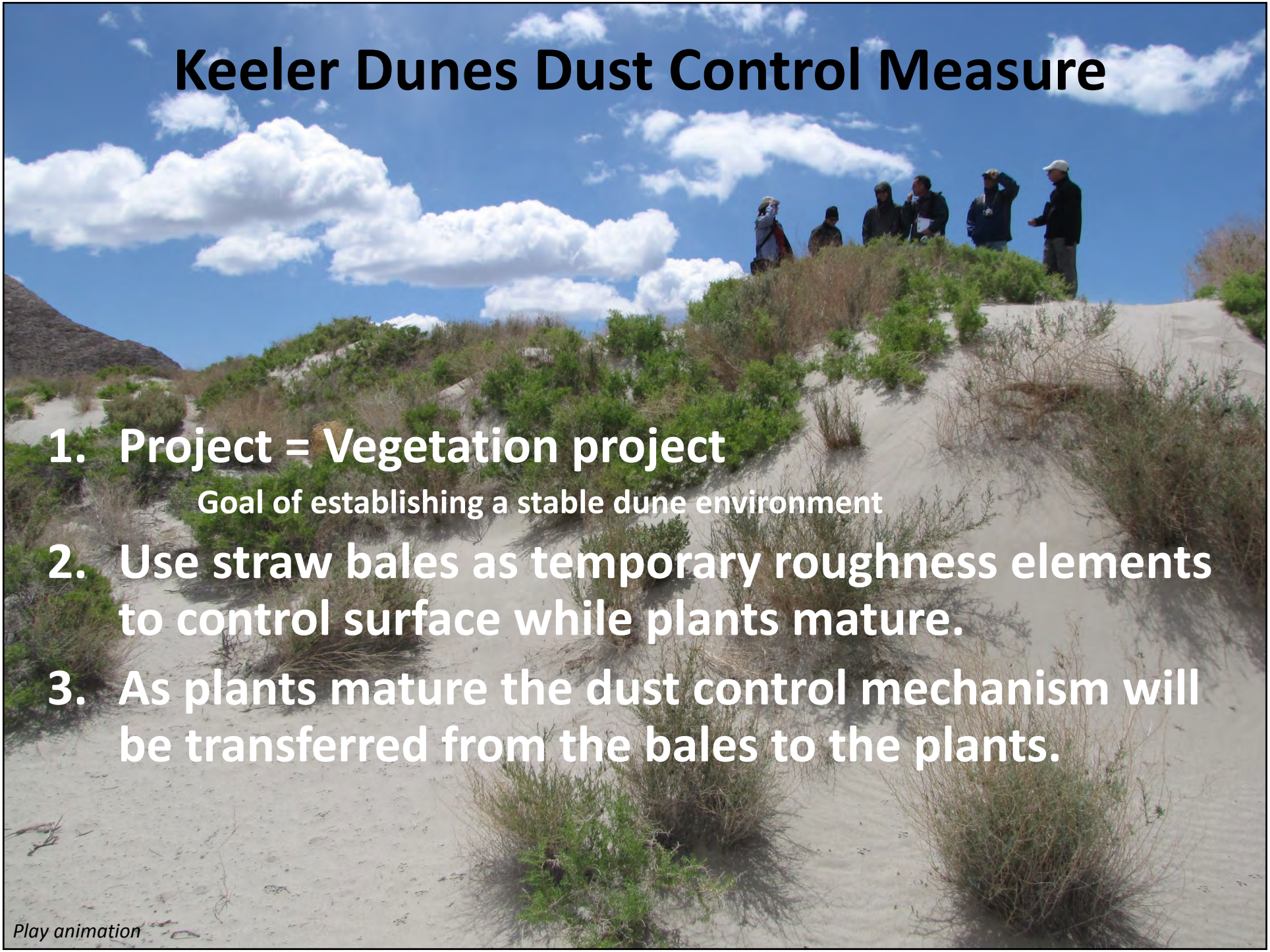
High Impact Dust Control Methods Eliminated for Keeler Dunes

MEASURES THAT DID NOT MEET PROJECT GOALS



- Dune Removal
- Owens Lake Gravel Blanket
- Owens Lake Shallow Flooding
- Owens Lake Managed Vegetation
- Chemical Stabilizers

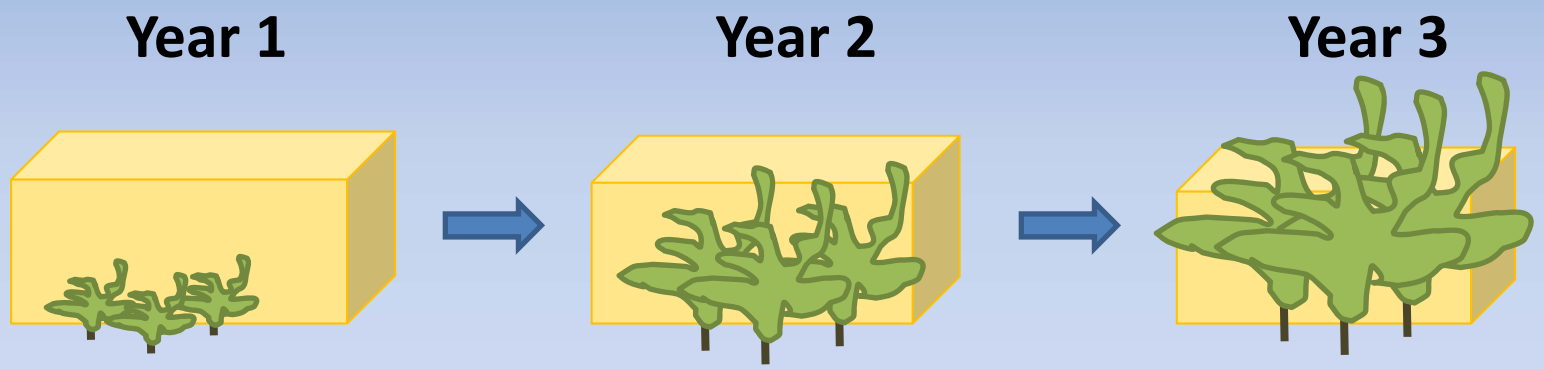
Keeler Dunes Dust Control Measure

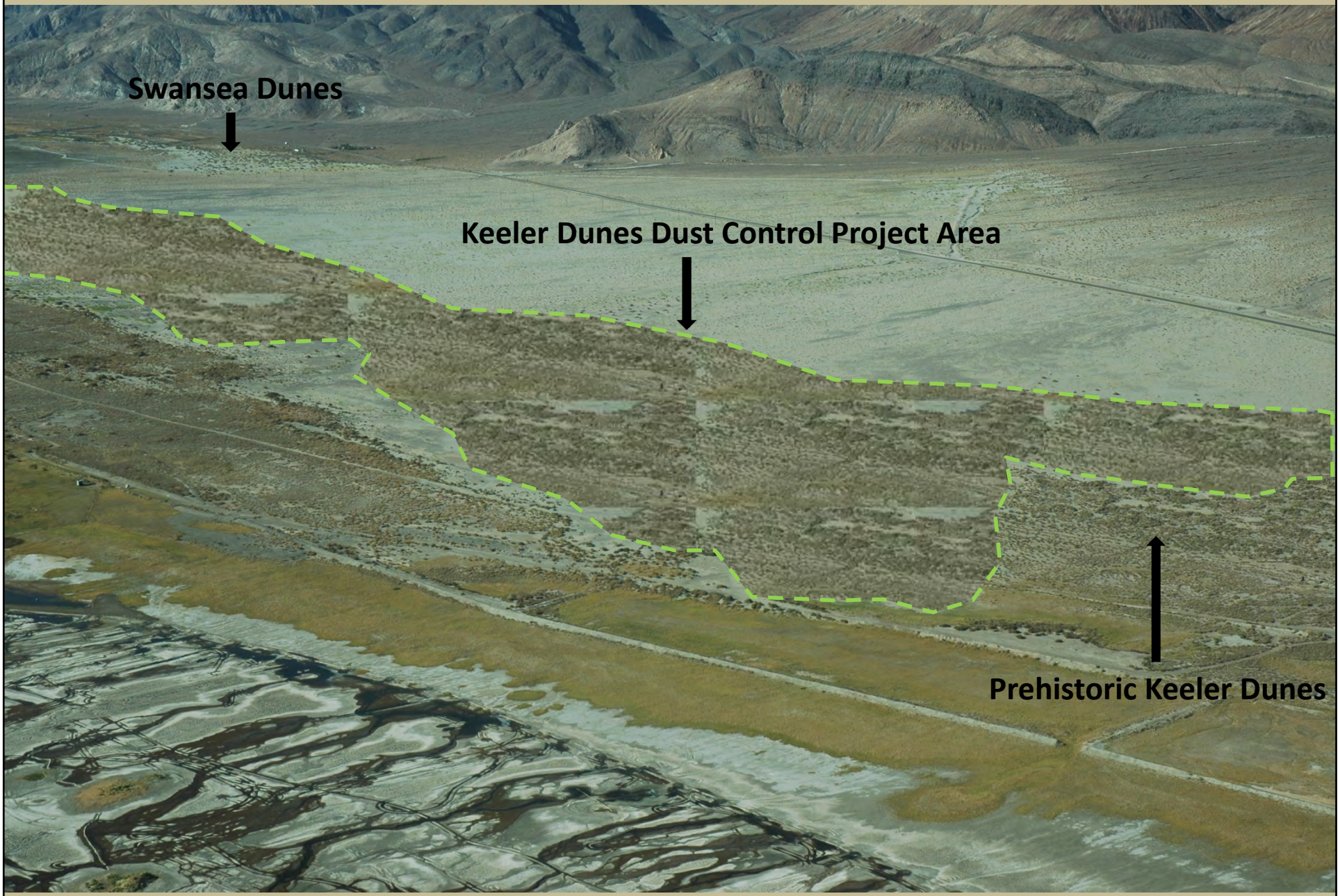


1. Project = Vegetation project
   Goal of establishing a stable dune environment
2. Use straw bales as temporary roughness elements to control surface while plants mature.
3. As plants mature the dust control mechanism will be transferred from the bales to the plants.

Play animation

Dust Control Measure Evolution Over Time



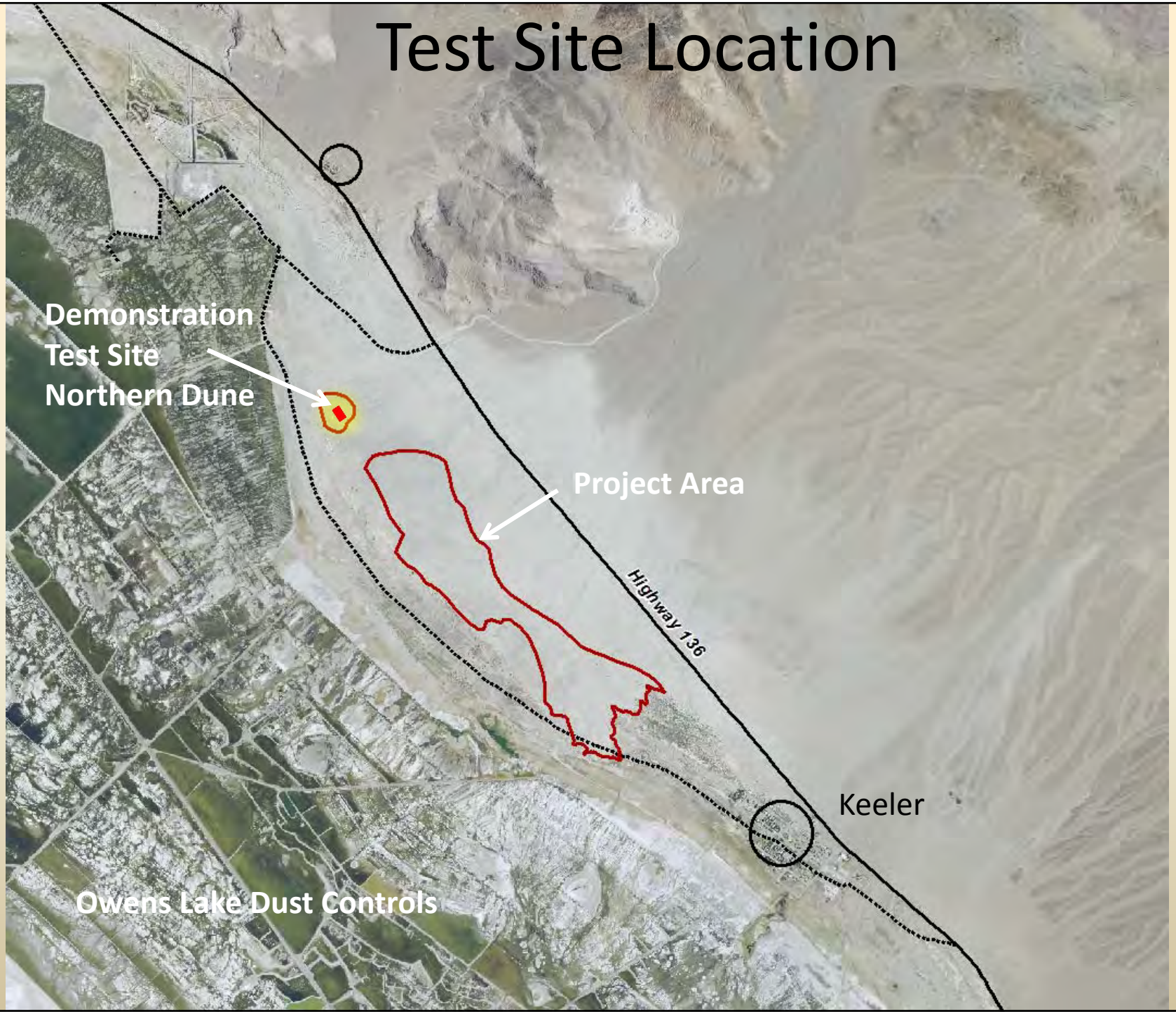


Animated simulation of Keeler Dunes dust control area after controls

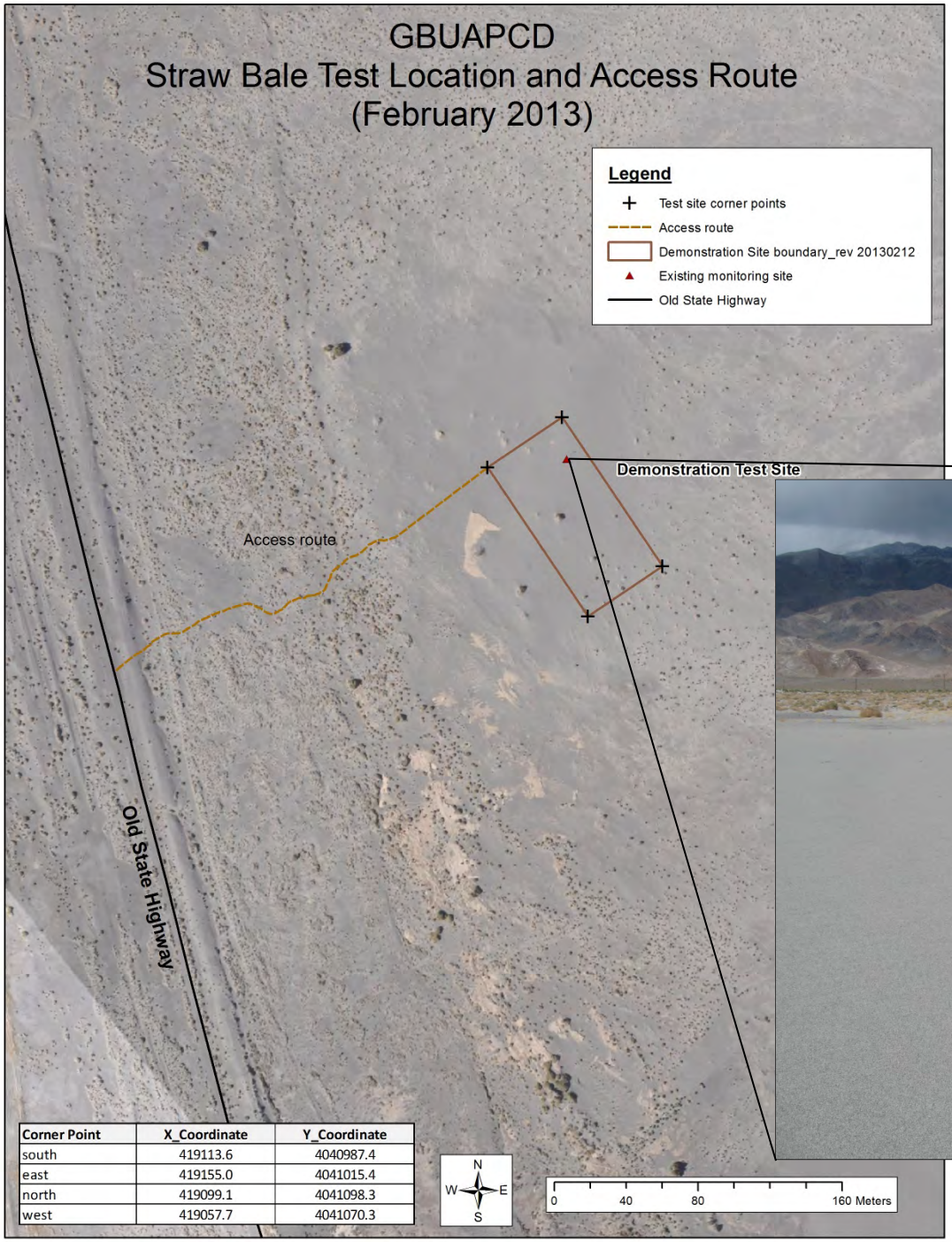
(Oblique air photo from September 2008)


STRAW BALE DEMONSTRATION PROJECT

Test Site Location



Pre-Project Test Site Condition and Site Access



Corner Point	X_Coordinate	Y_Coordinate
south	419113.6	4040987.4
east	419155.0	4041015.4
north	419099.1	4041098.3
west	419057.7	4041070.3

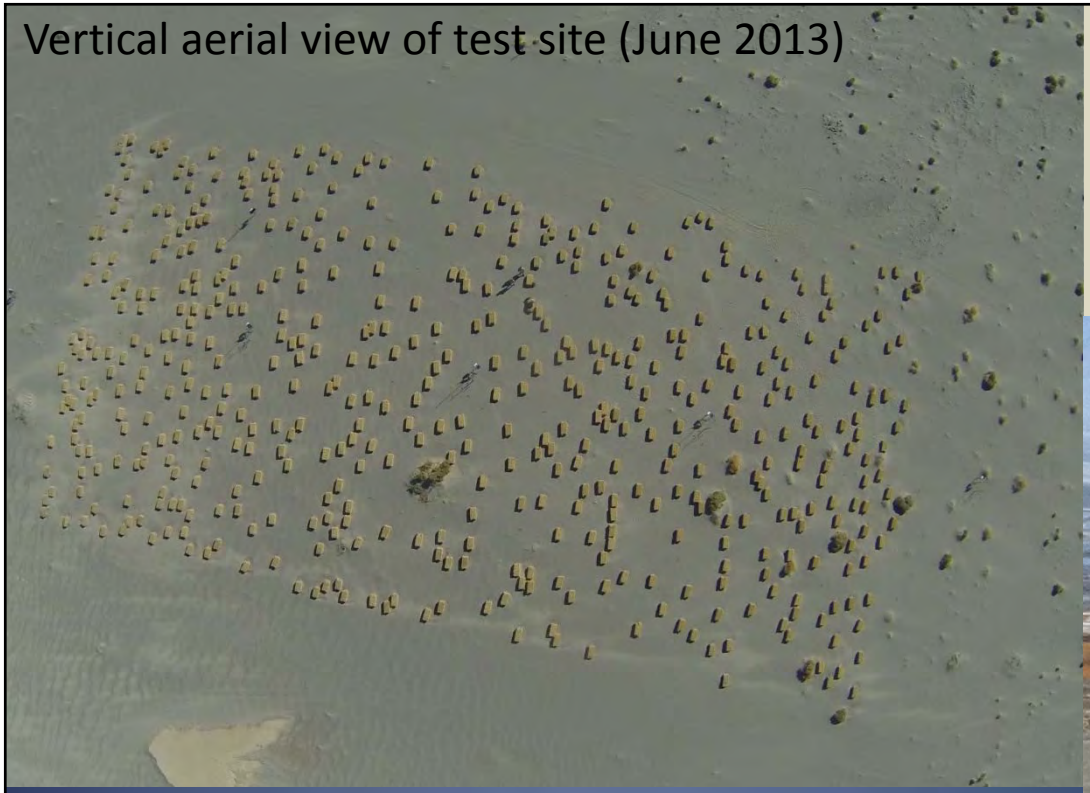
Pre-project ground view to north from site 9808

Straw Delivery
May 2013

Delivery along Old State Highway

TOTAL = 504 bales

Straw Bale Demonstration Project


Vertical aerial view of test site (June 2013)


Oblique aerial view of test site (May 2013)


View of test site from Dust Camera (May 2013)

Native Shrub Plant Propagation

Plants are being propagated for the large-scale project at the Antelope Valley Resource Conservation District nursery in Lancaster, CA

Straw Bale Demonstration Project

Plants and hand watering

Planting Native Shrubs

<u>At Each Bale</u>

- 3 plants
- 1 watering tube

Hand Watering System

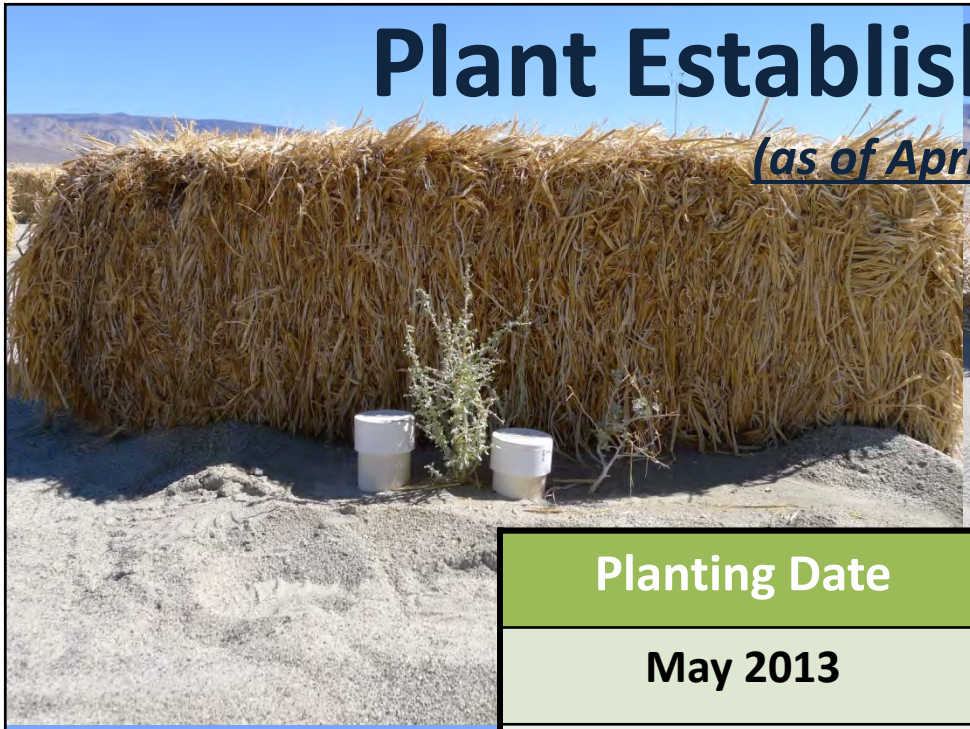
Note: A temporary above-ground rigid system will replace tank and ATV for most of project.

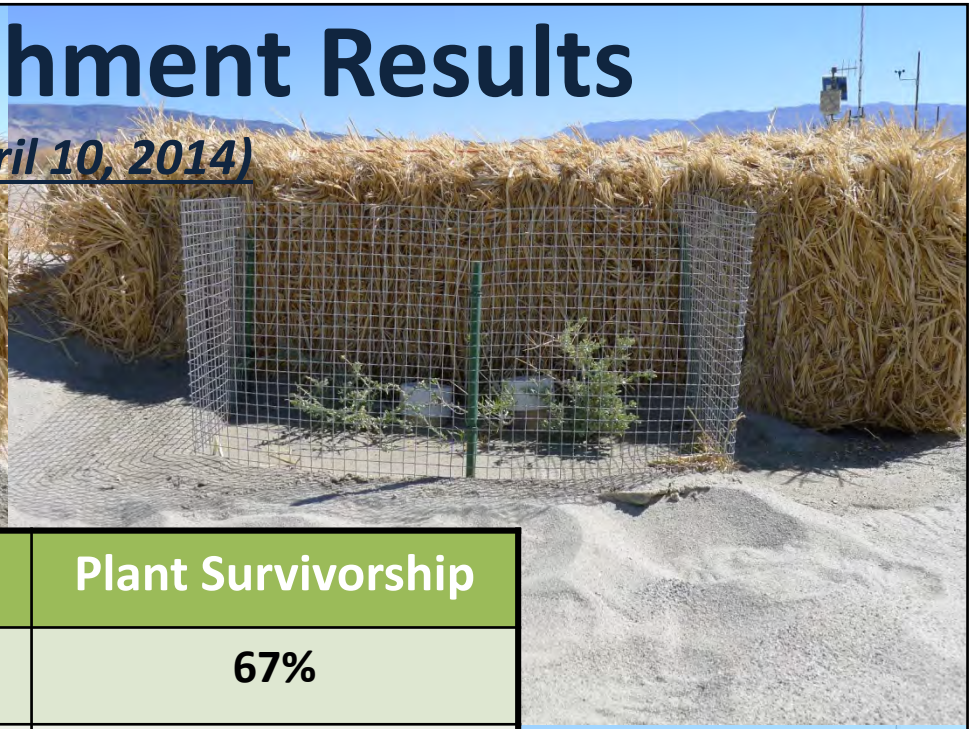
Proposed Irrigation Schedule – 3 years:

1) Initial Pre-planting watering
2) Supplemental Spring Irrigation
3) Supplemental Fall Irrigation

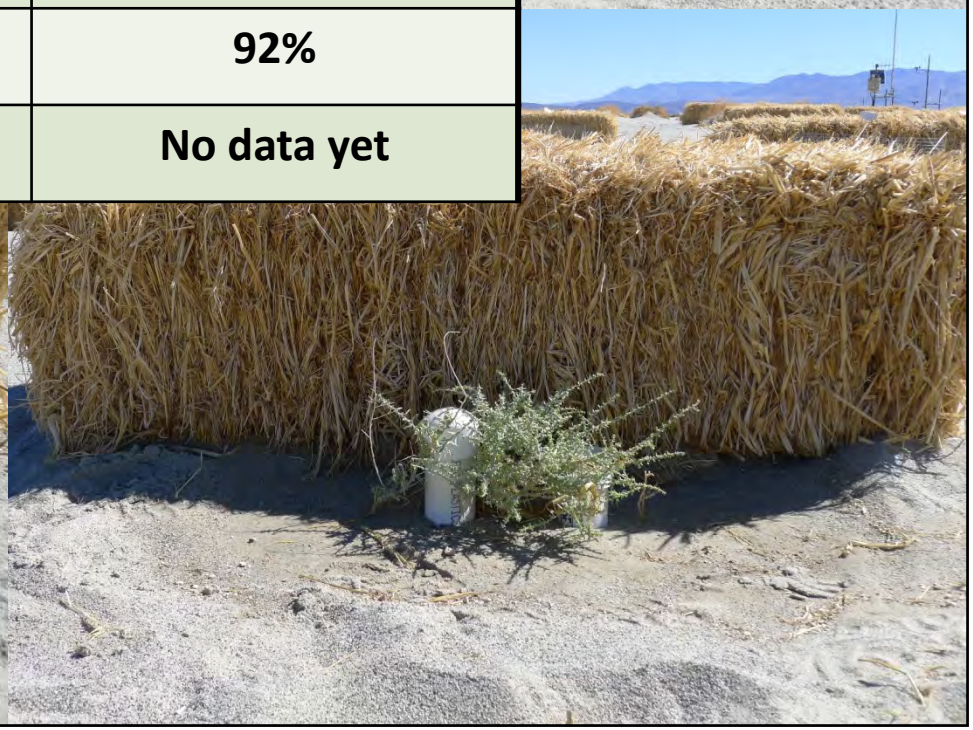
Plant Establishment Results

(as of April 10, 2014)





Planting Date	Plant Survivorship
May 2013	67%
October 2013	92%
March 2014	No data yet



Keeler Dunes Project

OVERVIEW

- Project Extent ~200 acres (194 acres of dust control and 3.2 acres of Staging Areas)
- Land Ownership = ~75% BLM property and ~24% LADWP lands
- District has worked with BLM and local stakeholders in the project design to minimize environmental impacts

6 Main Project Elements

1) **Straw Bales**

certified weed free rice straw

2) **Plants**

5 species of native shrubs

3) **Water**

about 10 acre-feet needed over 3 years in 7 irrigation events

4) **Irrigation System**

rigid temporary above ground system from the KCSD well

5) **Staging Areas**

4 Staging areas: 3 on Old State Highway, 1 on Gravel Haul Road

6) **Access Route**

No developed roads. Access trail along designated path.

1) Straw Bales – certified weed free rice straw

Proposed Project	Number of Bales
Bales and transportation to project site already procured by District	123,185

Notes on Straw Bales

- Bale pattern is based on a natural vegetation distribution (irregular but with preferred orientation).
- Bale pattern will be provided to contractor as a database of X-Y coordinates.
- Bales to be placed within 3 horizontal feet of target location.
- Bale orientation to be ± 15 degrees from target direction.
- District purchased ~123,500 bales for use on the project. (19,500 Bales to be delivered in Aug/Sep 2014 and remaining 104,000 bales available starting in Oct 2014)

2) Plants – 5 species of locally adapted native shrubs

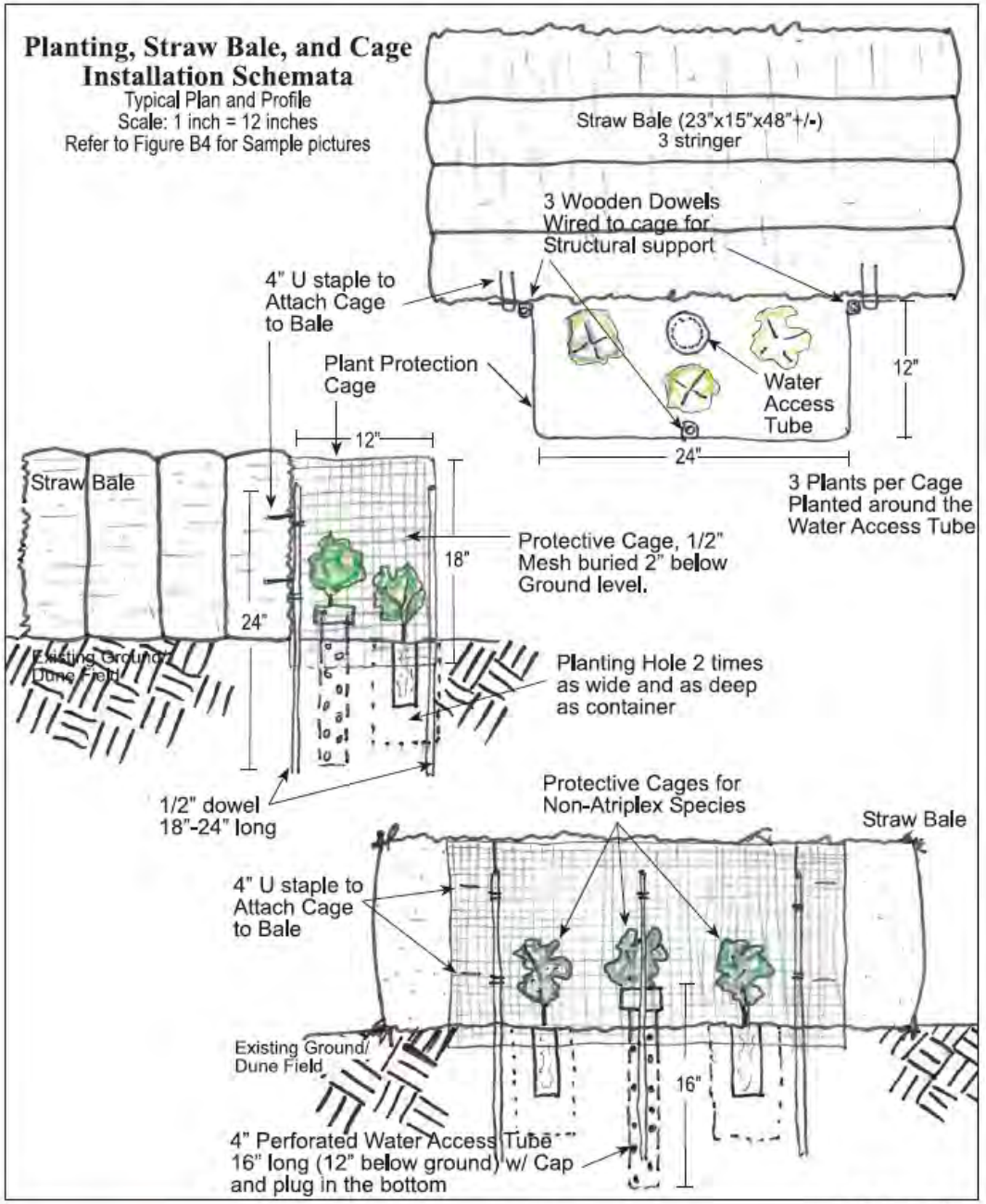
Species (Abbreviation)	Common Name
1. Atriplex polycarpa (ATPO)	Cattle spinach, cattle saltbush
2. Atriplex confertifolia (ATCO)	Shadscale saltbush
3. Atriplex parryi (ATPA)	Parry's saltbush
4. Suaeda moquinii (SUMO)	Inkweed, Mojave seablite
5. Sarcobatus vermiculatus (SAVE)	Greasewood

Nursery	Number of Plants
Plants being propagated by Antelope Valley Resource Conservation District, Lancaster, CA	369,555

Notes on Plants

- Contractor will have to arrange for transportation of plants from the nursery to the project site.
- Plants will be in containers 2"x2"x10" and will be 6-7" tall
- Design = three plants and one 4-inch watering tube per bale.
- ~10% of bales/plants will require wire protective cages (36,900).
- Watering tubes and cages will be removed at end of project.

Planting Schematic



amec

Planting, Straw Bale, and Cage Schemata
Keeler Dunes Dust Mitigation Project
Great Basin Unified Air Pollution Control District

FIGURE 5

03/24/2014 L:\1 --Projects--\Keeler Dunes\Phase 1 preconstruction\Bid Package\For Word Processing\Figures\FigB3_PlantingBaleSchemata.ai11

3) Water – 10 ac-ft needed over 3 years in 7 irrigations

Water use by year	Gallons per Bale	Gallons	Acre-Feet
Year 1 (Fall 2014 - Fall 2015)			
• Before and at time of planting	8	985,480	3.02
• Spring 2015 (April/May)	3	369,555	1.13
• Fall 2015 (Sept/Oct)	3	369,555	1.13
Year 2 (2016) - spring and fall			
• Spring	3	369,555	1.13
• Fall	3	369,555	1.13
Year 3 (2017) – spring and fall			
• Spring	3	369,555	1.13
• Fall	3	369,555	1.13
TOTAL		**3,202,120**	**9.83**

Notes on Water

- Water source is from the Keeler Community Services District (KCSD) well.
- Irrigation provided for three year period.
- Majority of project (177 acres, ~90%) will be watered through a temporary irrigation system.
- 17 acres of the project will be irrigated through hand watering (ATV and tank).
- Contractor is expected to install temporary above ground irrigation system as designed by AMEC.

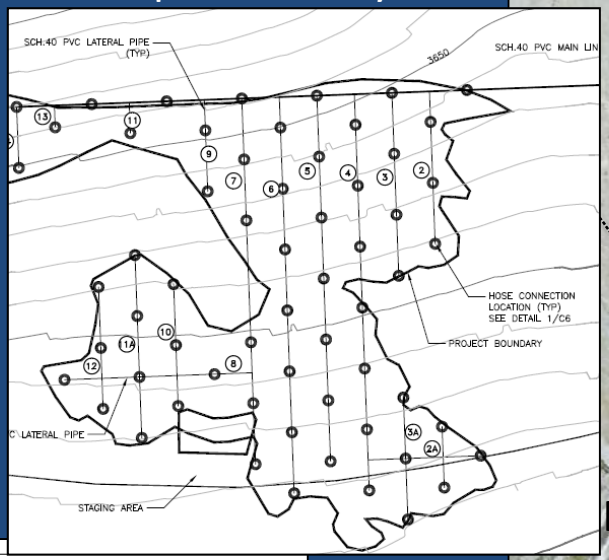
4) Irrigation System – temporary above ground system connected to KCSD well.

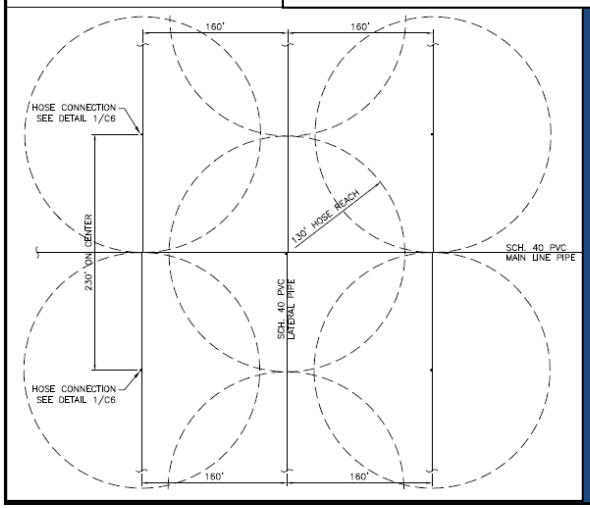
Irrigation system (design by AMEC)

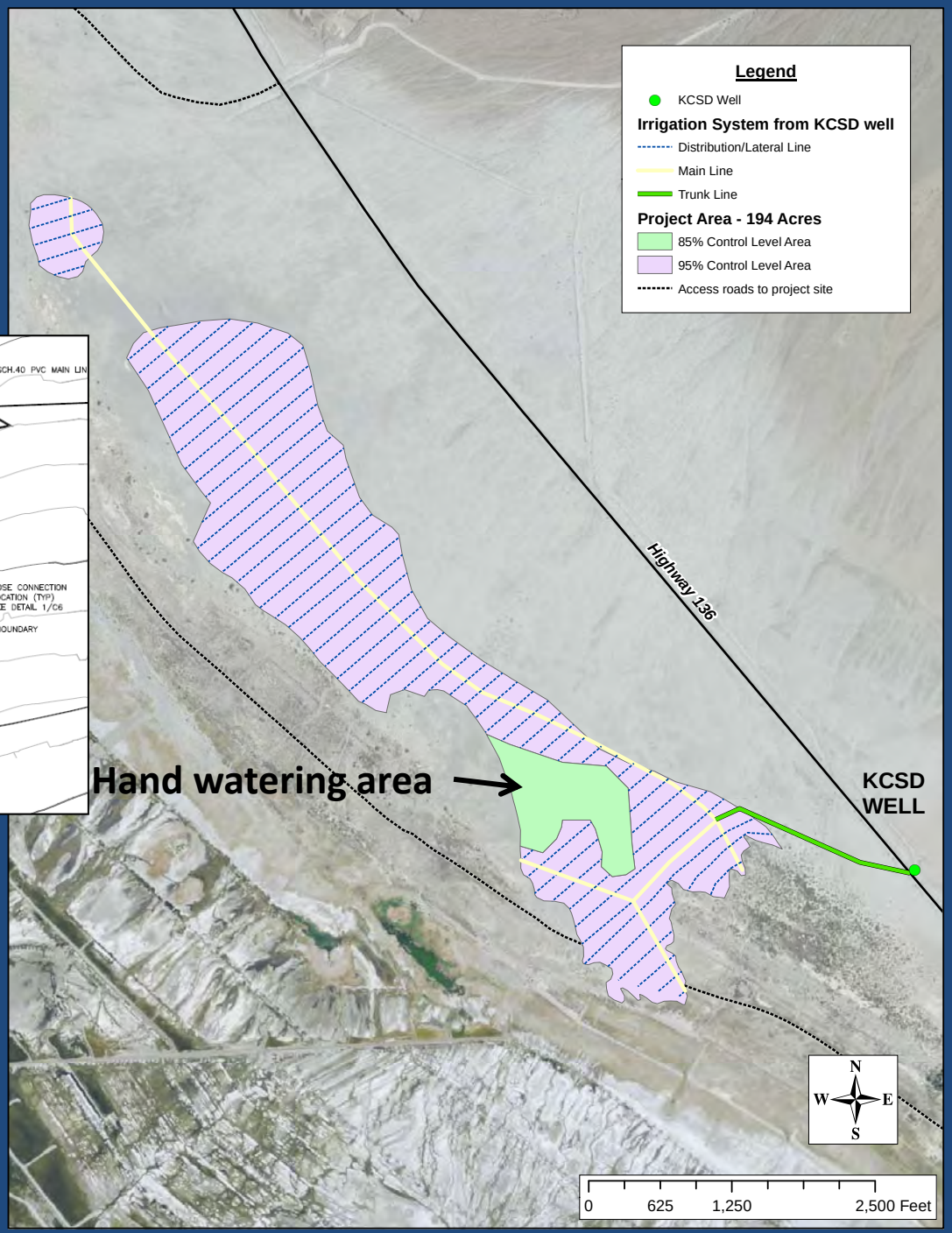
- Temporary above ground rigid system to provide water source in majority of project.
- Connected to KCSD well through pipeline constructed under SR 136.
- Contractor will be expected to conduct directional drilling under SR 136.
- Irrigation system constructed out of 2” and 4” PVC.
- Lateral lines will have hose attachment points for localized hand watering.
- Pipeline from well to project area needs to be painted to blend in with setting.
- Irrigation system to be drained between irrigation events.
- Contractor will remove irrigation system at the end of the project.

Irrigation System Overview

- 50 lateral/distribution lines
- Laterals spaced every 160’
- Watering from fire hose connected to laterals
- Hose attachment points every 230’







5) Staging Areas – four temporary areas with 3 along the Old State Highway and 1 along Gravel Haul Road.

Staging Areas	Notes	Dimensions
Staging Area 1: *Old State Highway*	Northern area	50’ x 300’
Staging Area 2: *Old State Highway*	Main staging/ parking area	200’ x 400’
Staging Area 3: *Old State Highway*	Truck turnaround	150’ x 300’
Staging Area 4: *Gravel Haul Road*	Bale and plant storage	10’ x 200’
TOTAL SIZE (acres)		**3.2 acres**

Notes on Staging Areas

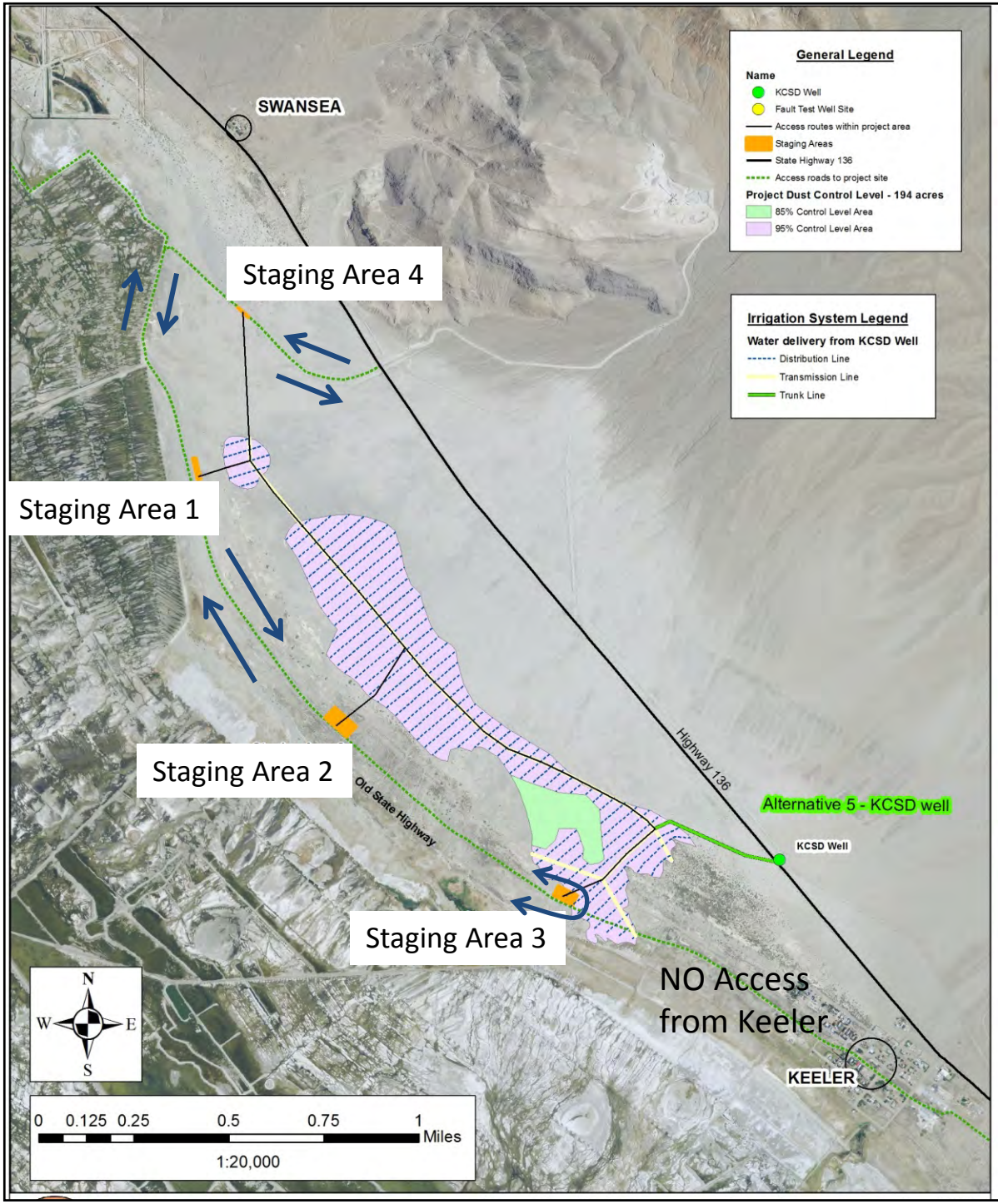
- Sited to minimize impacts to natural resources.
- No grading allowed or permitted.
- Vegetation will be “brushed”.
- No supplemental materials such as gravel or asphalt allowed.
- Staging areas will be restored at end of project.

6) Access Route – temporary access route into and within the project area for ATV travel.

Access Route	Length
Total Length (x 20 foot width)	~13,478 ft/2.5 miles

Access Route Notes

- ATV traffic only allowed on access route.
- No grading allowed or permitted.
- Route will use existing grade without modification.
- Vegetation will be avoided as much as possible. If avoidance is not possible then vegetation will be topped or brushed.
- No supplemental materials such as gravel or asphalt allowed or permitted.
- Sited to minimize impacts to vegetation and other resources.
- Access route will be restored at end of project.



Keeler Dunes Project

194 acre project extent with 2 control levels.

95% = 177 acres

85% = 17 acres

Irrigation of plants in 95% control area through implementation of a temporary above ground system supplied with water from KCSD well.

Irrigation of plants in 85% control area by hand watering.

Water delivered to project from pipeline connected to KCSD well.

Project Schedule

- EIR/EA Certification/adoption July 7, 2014
- Contract Award July 7, 2014
- Permit and lease approval by the end of July 2014
- Construction period August 2014 – January/Mar 2015
- First supplemental irrigation in April-May 2015
- End of Project - December 2017

Other Requirements and Expectations

1) Cultural monitoring – qualified archeologist and tribal monitor required during active construction.
2) Demonstrate effort to use of local workers.
3) Demonstrate effort to use local tribal workers in sensitive cultural areas for construction and during supplemental watering events.
4) Permits and Leases are being secured by AMEC for the District.


Questions?